

CHAPTER 98. EVALUATE A ROTORCRAFT-LOAD COMBINATION FLIGHT MANUAL (RLCFM)

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

- For initial certification: 1302
- Revisions: 1303

3. OBJECTIVE. The objective of this task is to ensure that an operator's RLCFM meets regulatory requirements and provides adequate procedures and guidance for safely conducting external-load operations. Successful completion of this task results in the approval of an RLCFM as part of a package of documents required for initial certification, the addition of a specific class of authorization, or the disapproval of an RLCFM.

5. GENERAL.

A. Authority. The operator is required by FAR 133.47 to develop an RLCFM as part of the application package for certification of rotorcraft external-load operations. FAR 133.47 DOES NOT apply to restricted category aircraft. FAR § 133.47(a) requires the RLCFM to include the operating limitations, procedures, performance, and other information established under this subpart of the FAR. This also includes the information established during operational flight checks performed under FAR 133.41. Limitations, procedures, performance, and other information not included in the approved rotorcraft flight manual (RFM) must be placed in the RLCFM (see Volume 2, Chapter 97 of this Handbook).

B. Content. Instructions and specifications for the contents of the RLCFM are outlined in Subpart G of FAR Parts 27 and 29, and FAR 133.41, 133.43, 133.45, and 133.47. Subpart G requires that operating limitations and other information necessary for safe operation be established and made available to the crewmembers. This is done in the form of the RLCFM.

C. Purpose. The RLCFM is prepared in order to impart the information necessary for the safe carriage of external loads.

D. Developing an RLCFM for Each Situation. The applicant is required to develop an RLCFM for each rotorcraft, except for restricted category aircraft. The RLCFM must cover each class of external-load operation that will be conducted with a specific rotorcraft.

(1) An RLCFM must be prepared for each rotorcraft, even if some makes and models are similar. The manufacturer's calculation of performance data and operating limitations may be unique for each rotorcraft.

(2) If the operator wishes to add or delete a load class, the RLCFM must be revised accordingly to reflect the safety considerations.

E. Initiation. The applicant for a FAR Part 133 External-Load Operating Certificate must submit two copies of an RLCFM for approval. The RLCFM must be prepared in conformance to Subpart G of either FAR Part 27 (Airworthiness Standards: Normal Category Rotorcraft) or FAR Part 29 (Airworthiness Standards: Transport Category Rotorcraft). FAR Part 21 does not require an RLCFM for restricted category rotorcraft.

F. Operator Briefing. The inspector usually advises an operator on how to prepare the RLCFM. The sample RLCFM (Figure 98-1) can be used as a guide for the operator. The operator should describe the step-by-step actions personnel shall perform to ensure compliance with the regulation. The operator may be briefed informally during a telephone conversation, or the inspector may schedule a preapplication meeting. (For guidelines see Volume 2, Chapter 97 of this Handbook.)

7. ISSUES AND GUIDELINES FOR PREPARING THE RLCFM.

A. An Acceptable Level of Report. An RLCFM is complete and acceptable if it reports all of the items enumerated in Section 2 of this Chapter, fulfills the requirements of Subpart G of FAR Part 27 or Part 29, and contains complete and accurate figures.

B. Determine Authorized Weights. The following methods are provided for the inspector to assess how maximum authorized weights are determined:

(1) The maximum external-load weight is determined by the inspector for each load class for which approval is requested. That maximum weight, which is recorded in the “weight authorized” column on the reverse of FAA Form 8710-4, Application for Rotorcraft External-Load Operating Certificate, reflects the attaching means maximum weight capacity.

(2) Some aircraft are authorized to operate at weights above the normal maximum gross weight when the excess weight is carried on the cargo hook. These higher weights are described in the RFM or RFM supplement. Sometimes an aircraft may have other approved special equipment installed that lowers or raises the maximum attaching means weight. The “limitations and remarks” column of the inspector report (reverse side of FAA Form 8710-4) should reflect any information concerning a maximum weight

limit or a special equipment installation the inspector may

wish to enter.

(3) There are many other factors that affect the maximum weight that an aircraft could carry. Each of these should be clearly delineated within the operator’s RLCFM. Each operator should develop procedures to guide their pilots in calculating the various factors that affect aircraft performance. Maximum weights based on aircraft structural limitations are not the only limiting factor. Some other considerations are aircraft empty weight, fuel required for operation, fuel reserve, crew weight, density altitude, and one engine inoperative performance (Class D). The RLCFM should discuss each of the factors and describe how the pilot applies them to each external-load operation.

(4) An example of one way to calculate weight is shown in Table 1.

C. Center of Gravity (CG) Considerations. The RLCFM should contain information for use by the pilot in determining both the longitudinal and the lateral CG.

TABLE 1

Maximum gross weight	_____
	minus
Aircraft empty weight	_____
	minus
Fuel required for operation	_____
	minus
20 minute fuel reserve	_____
	minus
Pilot weight	_____
	equals
Maximum authorized weight (not to exceed maximum gross weight or maximum attaching means weight)	

(1) The RLCFM must contain information for calculating longitudinal and lateral CG for each class of external-load authorized, or reference the RFM for this information. Additional information may have to be developed by the operator for Class C loads.

(2) The list of maximum airspeeds and weights for each load class demonstrated in operational flight checks must be included in the RLCFM. If these were not accomplished before the RLCFM was written, return the document after the flight checks, and have the operator put the list in the RLCFM.

9. REVISIONS. RLCFM revisions must be approved by an inspector before they are printed and distributed. Revisions must also conform to regulatory requirements. If a printed and distributed RLCFM revision does not conform to the appropriate regulations, the operations specifications (OpSpecs), or the operating certificate, the inspector should immediately notify the operator in writing, requesting appropriate action to resolve the problems (Figure 98-2). For subsequent revisions to the RLCFM, the inspector is required to sign only the record of revisions, the table of contents, and the revised pages.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites. This task requires knowledge of FAR Part 133 regulatory requirements and FAA policies, qualification as an Aviation Safety Inspector (ASI) Operations, and experience as an external-load pilot.

B. Coordination. This task requires coordination with the airworthiness unit.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References.

- FAR Parts 1, 27, 29, 91, and 133
- Approved RFM
- Advisory Circular (AC) 133-1, Rotorcraft External-Load Operations in Accordance with FAR Part 133
- AC 91-32, Safety in and Around Helicopters
- AC 91-23, Pilot's Weight and Balance Handbook
- AC 91-42, Hazards of Rotating Propeller and Helicopter Rotor Blades
- PTRS Procedures Manual (PPM)

B. Forms.

- None

C. Job Aids.

- Sample RLCFM
- Sample letters and figures

5. PROCEDURES.

A. Brief the Applicant. Advise the operator to develop a document describing the procedures to be used to comply with the requirements outlined in Section 2, paragraph 5C of this Chapter. Inform the applicant that the RLCFM must be an approved document that may be prepared with the advice of the inspector.

B. PTRS. Open PTRS file.

C. RLCFM Contents. Review the RLCFM for completeness of content and accuracy of the figures. Refer to FAR 133.41, 133.43, 133.45, and 133.47 for a list of requirements that the RLCFM must meet. (A sample RLCFM is found in Figure 98-1.)

(1) The RLCFM should state the operating limitations, normal and emergency procedures, performance, and other such information from Subpart G of either FAR Part 27 or 29, whichever is applicable.

(2) FAR 133.47(b) requires the RLCFM to set forth the Classes (A, B, C, D) for which airworthiness of the rotorcraft has been demonstrated.

(3) The RLCFM must include a section that gives the following information:

(a) information on any peculiarities discovered when operating with particular rotorcraft load combinations;

(b) precautionary advice about static electricity discharges for Class B and D loads;

(c) procedures for computation of lateral and longitudinal CG, if not adequately described in the RFM (the applicant usually must compute the lateral CG for each class); and

(d) any other information considered essential for safe operation with external-loads should be included.

(4) The RLCFM must have a list of the maximum airspeeds and weights that were demonstrated while performing operational flight checks conducted by the manufacturer or the operator.

D. Results of RLCFM Evaluation.

(1) If the RLCFM is satisfactory, the certification project manager (for an initial certification) or the principal operations inspector (POI) (for an existing operator) approves the RLCFM as per Volume 1, Chapter 4, Section 2 of this Handbook. Return the original to the operator, and keep a copy for the file.

(2) If the RLCFM is unsatisfactory, notify the operator in writing, indicating the areas of deficiency (Figure 98-2).

(a) Return the RLCFM for correction.

(b) Keep a copy of the letter sent to the operator in the file until the corrected RLCFM is returned.

E. Revisions. Inform the applicant that to revise the RLCFM, the applicant sends the original of the revision, one copy of the revision, and a new page control sheet to the inspector.

(1) Evaluate the revision as per original RLCFM approval.

(2) Approve or reject the revision as per original RLCFM approval.

F. PTRS. Close PTRS file.

7. TASK OUTCOMES. Completion of this task results in either of the following:

A. An approved RLCFM or an approved revision.

B. A letter indicating that the RLCFM is not approved.

9. FUTURE ACTIVITIES.

A. Possible review of revisions to the RLCFM.

FIGURE 98-1
SAMPLE RLCFM

ROTORCRAFT-LOAD COMBINATION FLIGHT MANUAL

[Date submitted for approval]

THIS SAMPLE RLCFM SHOULD BE MODIFIED TO REFLECT LIMITATIONS AND
PROCEDURES APPLICABLE TO A SPECIFIC EXTERNAL-LOAD OPERATOR AND
THE SPECIFIC AIRCRAFT AND LOAD CLASSES FOR WHICH APPROVAL IS GIVEN.

Rotorcraft Registration Number: N

Rotorcraft Make and Model:

FAA Approved *[date]*

[POI's signature]

[FSDO]

FIGURE 98-1—Continued
SAMPLE RLCFM

[illegible]

Figure 98-1 — Continued
Sample RLCFM

CONTENTS

SECTION 1**OPERATING LIMITATIONS:**

1. Certification
2. Persons aboard
3. Total weight and speed limitations
4. Location of center of gravity
5. Miscellaneous limitations

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1. Information peculiar to the load combination
2. Operating procedures
3. Emergency conditions
4. Static electricity discharges
5. Other information essential to operational safety
6. Ground-to-air hand signals
7. External-load securing procedures
8. Fuel burn/center of gravity
9. Required placards

SECTION 3**INFORMATION:**

1. General
2. Flight and non flightcrew personnel
3. Passengers
4. Safety around helicopters

Date submitted for approval

FAA-approved (date) _____ Inspector _____

Flight Safety District Office (FSDO)

APPENDIX 1**CONGESTED AREA PLAN APPROVAL:**

1. Sample Plan
2. Sample Diagram of Area
3. Letter of Agreement

Figure 98-1 —Continued
SAMPLE RLCFM

SECTION 1

OPERATING LIMITATIONS

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual (RFM), this aircraft will be operated in accordance with the following operating limitations:

1. No person shall operate this aircraft with an external-load unless that person holds an FAA External-Load Operator Certificate and has a letter of competency or an entry in his or her logbook as required by FAR 133.37(a)(2). A copy of letter of competency or the knowledge and skill test logbook endorsement must be in that person's possession during the operation.
2. No person who is not a required crewmember may be carried aboard the aircraft unless that person performs an essential function in connection with the external-load operation. When the aircraft used requires a hoist operator, the air crewmember must wear an approved hoist operator's safety harness while not seated with a seat belt fastened.
3. Operations shall not be conducted over congested areas unless approved by the FAA FSDO in accordance with a congested area plan (CAP) developed in compliance with FAR 133.33(d)(1) and (2). (See sample plan in Appendix 1 of this manual.)
4. No person may serve as a pilot of this aircraft during external-load operations, unless that person has passed the knowledge and skill tests required by FAR 133.23 for the class of operation being conducted.
5. A copy of the External-Load Operating Certificate and RLCFM will be on this aircraft during all external-load operations.
6. The total weight of this aircraft and load combination shall not exceed:

Make and model _____ N-number _____

Class A load max weight _____ # not to exceed mgw _____

Maximum forward airspeed _____ knots (kts.) Other _____

NOTE: Maximum load figure as derived using a _____ pound pilot weight and _____ pounds of fuel.

Make and model _____ N-number _____

Class B load max weight _____ # not to exceed mgw _____

Maximum forward airspeed _____ knots (kts.) Other _____

NOTE: Extreme caution must be exercised when carrying Class B external-loads, as controllability may be affected by the size and shape of the cargo.

NOTE: These maximum load figures were derived using a _____ pound pilot weight and _____ pounds of fuel.

Make and model _____ N-number _____

Class C load max weight _____ # not to exceed mgw _____

Maximum forward airspeed _____ knots (kts.) Other _____

FIGURE 98-1 — CONTINUED
SAMPLE RLCFM

NOTE: These maximum load figures were derived using a ____ pound pilot weight and ____ pounds of fuel.

7. The location of the center of gravity for this aircraft and load combination shall be within the center of gravity range established during type certification under FAR Part 27 or FAR Part 29 or special purpose certification of the aircraft.
8. Other limitations deemed necessary by the operator or contained in the approved flight manual or its supplements.

SECTION 2

LOAD-COMBINATION INFORMATION

1. The operator will list information pertaining to the peculiarities of the load combination, such as the following:
 - a. oscillating tendencies
 - b. ground effect
 - c. density altitude
 - d. strong or gusty winds
 - e. abrupt control movements
 - f. acceleration limitation
 - g. maximum Class A lateral load imbalance
 - h. lateral CG calculation procedure
2. **NORMAL.** Inspect the cargo sling or basket for proper installation and overall condition. Check the load to make sure it is rigged properly and safely. For Class B and C loads, check the electrical release and the manual release on the ground before flight. Activate the circuit by pushing the cargo release circuit breaker IN.

This is an example of information that may be applicable to some types of cargo attach devices: Lift the cargo load to a hover, then check the remaining power to determine if there is enough to carry the load safely. While hovering, verify that directional control is adequate. When moving into horizontal flight, use smooth, slow control movements to minimize settling and to prevent the load from swinging. In climbing forward flights, check for hazardous oscillations of the external-load. When approaching a landing area with a load, identify the delivery point, come in slowly, into the wind, at the shallowest possible angle to ensure that the load clears all obstructions safely. Start bringing in power early to slow your descent and forward airspeed, ending in a hover short of the release point and in view of any ground crew personnel. Follow ground signal instructions to hover over the release point. Place the load on the ground without any movement of the load. When the helicopter is stabilized over the load and has slack in the sling, open the cargo hook by normal means.

In the event of electrical failure, use the manual release to drop the cargo load. If any difficulties arise during the flight that warrant an emergency landing, release the load immediately. If for some reason the load will not release, do not drag the load on the ground before touchdown. This may cause the aircraft to nose over with inadequate aft cyclic control to compensate.

3. Information regarding static electricity discharge: Before attaching the cargo hook to the load, make sure the aircraft has been grounded to dissipate charges of static electricity that may have built up during flight.

FIGURE 98-1 — CONTINUED
SAMPLE RLCFM

4. The operator will list any other information essential for safe operation, such as:
 - a. precautions to avoid high tension wires
 - b. lightning (Class C loads)
 - c. radio communications procedures
 - d. crossing over main highways, etc.
 - e. procedures for the placement of cargo at delivery may vary according to a specific operation class.
5. All personnel engaged in the external-load operation will be familiar with and use the hand signals found on page ____ of this manual. (List the procedures used to ensure familiarity.)
6. Class A external-load securing procedures: Use the company procedure to make precautionary landings in the event the securing devices become disconnected or loose.
7. Fuel burnoff and how it may affect the center of gravity en route.
8. Required placards:
 - a. A placard for the maximum external-load will be marked on each side of the fuselage near the external-load hook or basket if a Class A load.
 - b. An instrument panel placard will be installed describing load class approval and passenger occupancy limitations.
9. Class B Cargo Hookup: After the helicopter has been directed into position, one ground crewmember should remain within sight of the pilot to give positive direction with hand signals, or remain in direct radio contact with the pilot, while an appropriate number of other crewmembers attend to the cargo hookup. All hookups made to the helicopter while it is in a hover should be hastened to minimize the time the hookup personnel spend underneath the helicopter. If a hookup is to be performed without the aid of a ground guide and without using direct visual operational contact, an air crewmember should lie prone on the floor and look downward from the main entrance doorway where the actions of the ground crewmembers can be observed; the pilot can be directed by this crewmember on the interphone. Crewmembers should wear an approved safety harness when not seated with a seat belt fastened.
10. Hand Signals: When giving hand signals to the pilot, a ground crewmember must stand in front of and to the pilot's side of the helicopter, within sight of the pilot. See page ____ of this manual for hand signals.
11. Class D Authorization - Carriage of Persons: All Class D operations will be conducted using only FAA-approved personnel lifting devices. Each operation will be conducted with a minimum of two crewmembers on board the helicopter. Intercom communication will be maintained between the pilot and other crewmember. This second crewmember must be able to advise the pilot of the status of the lift device and be able to release the empty device should it become necessary. This release must require two separate and distinct actions: arm the system; depress the release button. Where possible, a third person associated with the lift will be in position on the surface and communicating by radio with the pilot. This person's purpose is to advise the pilot of any safety related item and to supervise the loading or unloading of the personnel lifting device. Further, this person should ensure that the maximum weight appropriate for this operation, as determined by the pilot, is not exceeded.

FIGURE 98-1 —CONTINUED
SAMPLE RLCFM

The operating limitations as set forth in Section 1 and the load combination information contained in Section 2 are the conditions under which I will conduct this rotorcraft external-load combination operation.

Operator's signature

SECTION 3

INFORMATION

All personnel associated with an external-load operation should be familiar with the following information.

1. **GENERAL.** People have been injured, sometimes fatally, in helicopter accidents that would not have occurred had they been informed of the proper method of boarding or deplaning. Properly briefed nonflight personnel should never be endangered by a spinning tail rotor. The simplest method of avoiding accidents of this sort is to have the rotors stopped before nonflight personnel are boarded or allowed to depart. Because this action is not always practicable and because of the unique capabilities of the helicopter, it is often necessary to board personnel while the rotors are turning. Therefore, to avoid accidents, it is essential that all persons associated with helicopter operations be made aware of all possible hazards and instructed in how to avoid them.
 2. **FLIGHT AND NONFLIGHT CREW PERSONNEL.** Persons directly involved with boarding or deplaning personnel, aircraft servicing, rigging or hooking up of external-loads, etc., should be thoroughly instructed in their duties. It would be difficult, if not impossible, to cover each type of crew training related to the safe operation of helicopters; however, some areas that should be covered are as follows.
 - a. Ramp attendants and aircraft servicing personnel should be instructed in their specific duties and how to accomplish them safely. This includes the following:
 - (1) Keeping persons scheduled to board and unauthorized persons away from the helicopter landing and takeoff areas.
 - (2) Briefing boarding personnel on the best way to approach and board a helicopter whose rotors are turning.
 - b. Proper procedures for aircraft servicing include the following:
 - (1) The helicopter rotor blades should be stopped and both the aircraft and the refueling unit properly grounded before any refueling operation. The pilot should ensure that the proper grade of fuel and any required additives are used.
 - (2) Refueling the aircraft while the blades are turning
- “Rapid refueling” may be practical for certain types of operation. However, this can be hazardous when safe procedures are not followed. Pilots should remain at the flight controls during fueling; refueling personnel should be knowledgeable about proper refueling procedures and properly briefed for specific makes and models of aircraft.
- (3) Refueling units should be positioned to ensure adequate rotor blade clearance; persons not involved with the refueling operation should be kept clear of the area.
 - (4) Smoking must be prohibited in and around the aircraft during all refueling operations.

FIGURE 98-1 —CONTINUED
SAMPLE RLCFM

c. External-load rigger training is possibly one of the most difficult and continually changing aspects of the helicopter external-load operation. A poorly rigged cargo net, light standard, or load pallet could result in a serious, costly accident. It is imperative that all riggers be thoroughly trained to meet the needs of each external-load operation. Since rigging requirements may vary several times in a single day, proper training is of the utmost importance to safe operations.

d. Pilot at the flight controls.

(1) Many helicopter operators have been lured into a “quick turnaround” ground operation to avoid delays at airport terminals and to minimize stop/start cycles of the engine. As part of this quick turnaround, the pilot will leave the cockpit with the engine and rotors turning. Such an operation can be extremely hazardous if a gust of wind disturbs the rotor disc, or if the collective flight control moves causing lift to be generated by the rotor system. Either occurrence may cause the helicopter to roll or pitch resulting in a rotor blade striking the tailboom or the ground.

(2) Safe operating procedures include pilots remaining at the flight controls whenever the engine is running and rotors are turning. This is especially important near passenger terminal areas. If the pilot finds it necessary to leave the controls of a running machine when in areas where people may be endangered, the pilot should:

- (i) ensure that all controls are secured in accordance with the aircraft flight manual, and
- (ii) reduce rotor and/or engine RPM to the minimum recommended settings.

e. External-load signalmen should know the following:

(1) The lifting capability of the helicopters involved. This knowledge is essential for some operators have models of helicopters that have almost identical physical characteristics but different lifting capabilities.

(2) The pilots. The safest plan would be to standardize procedures for pickup and release of sling loads. Without standardization, the hookup person would have to learn the technique used by each pilot. The hookup person should also insist on standardization of pilot techniques for any sort of emergency that may occur while personnel are beneath the helicopter.

(3) The cargo. Many items carried externally are very fragile. The hookup person should always know when a hazardous article is involved and the nature of the potential hazard. Explosives, radioactive materials, and toxic chemicals are examples of possible cargo. (49 CFR Parts 172.101 and 172.102 contain the hazardous materials commodity lists.) In addition to knowing the nature of the cargo, hookup personnel should be familiar with the types of protective gear, clothing, and actions that are necessary for safe operation.

(4) The appropriate hand signals. When direct radio communications between ground and flight personnel are used, the specific meaning of hand signals should be assured before operations commence.

(5) Emergency procedures. Ground and flight personnel should fully agree to and understand all necessary actions to be taken by all concerned in the event of emergency. This prior planning is essential in avoiding injuries when emergencies do occur.

(6) All aspects of the external-load operation being conducted. The pilot conducting the external-load operation will complete a detailed briefing for all personnel, no matter how remotely involved in the operation, prior to starting the operation.

FIGURE 98-1 —CONTINUED
SAMPLE RLCFM

3. NONFLIGHT CREW PERSONNEL. All persons who board a helicopter while its rotors are turning must be instructed in the safest means of doing so. If at the controls, the pilot may not be able to conduct a boarding briefing. Therefore, the individual who arranged for the personnel to be carried or the individual assigned as a ramp attendant should accomplish this. The exact procedures may vary slightly from one model helicopter to another, but in general the following should suffice.

a. Boarding:

(1) Stay away from the rear of the helicopter.

(2) Crouch low before walking under the main rotor.

(3) Approach from the side or front but never out of the pilot's line of vision, and only when cleared by the pilot or ground personnel in contact with the pilot.

(4) Hold firmly to hats and loose articles.

(5) Never reach up for or run after a hat or other object that is blown away.

(6) Protect your eyes by shielding them with your hand or by squinting.

(7) If you are suddenly blinded by dust or a blowing object, stop, crouch lower, or sit down, and await help.

(8) Never grope or feel your way toward or away from a helicopter.

b. Since few helicopters carry flight attendants, the pretakeoff briefing must be made by the pilot. The type of operation will determine what sort of briefing is to be given, but personnel should always be briefed on the following.

(1) The use and operation of seatbelts for takeoff, en route, and landing. Emphasis should be placed on how to release the specific kind of seatbelt installed in the particular aircraft. Automotive type releases are not always used in helicopters; for instance, some belts use buckles that are rotated to open.

(2) The location and use of flotation gear and other survival equipment that might be on board; how and when to "abandon ship" if a ditching is necessary.

(3) For flights over rough or isolated terrain, all occupants should be told where maps and survival gear are located.

(4) Each person on board should be instructed in what actions and precautions to take during an emergency, and how and when to exit after landing in the event of an emergency. Ensure that passengers are aware of the location of fire extinguishers, pyrotechnic signaling devices, life preservers, and other survival equipment. Instructions on the location and methods of opening normal and emergency exits should be explained. A diagram or pictorial display on a passenger briefing card is encouraged.

(5) Smoking within 50 feet of an aircraft on the ground should be prohibited. Smoking while flying could be permitted, at the discretion of the pilot, except under the following conditions:

(i) during all ground operations;

(ii) immediately before, during, or after takeoff or landing; and

(iii) when carrying flammable or hazardous materials (49 CFR).

c. What passengers need to be told in a prelanding briefing is determined by the conditions of the landing. For example, if on a hill, depart downhill. If this involves walking around the helicopter to avoid the area of lowest rotor clearance, always go around the front, never the rear. The diagrams included in AC 91-32, Safety in and Around Helicopters, could be adapted to a passenger briefing card.

FIGURE 98-1 —CONTINUED
SAMPLE RLCFM

Appendix 1
CONGESTED AREA PLAN
(submit in duplicate)

Name, address, telephone number of Operator:

Name, address, telephone number of Contractor:

Rotorcraft Identification Number: N

Rotorcraft Make and Model (HU-369D, etc.):

Rotorcraft Airworthiness Category (Normal, Restricted, Transport):

Pilot Name and Certificate Number:

DATES AND TIMES OPERATION WILL BEGIN AND TERMINATE:

Date Time begin Time end

// : :

// : :

// : :

Name, title, and telephone number of appropriate official of the local subdivision who has agreed to exclude unauthorized persons from the operational area, if applicable:

Copy of agreement attached?

List of streets or roads that will be blocked during operation, if applicable:

Ingress/Egress routes, if applicable:

(If appropriate) This operation has been coordinated with the following air traffic control facilities:

FIGURE 98-1 —CONTINUED
SAMPLE RLCFM

Appendix 1
Description and Weight of Loads to be Carried:

Class _____

Description _____

Length of attaching means (includes hook and cable) _____

Weight of load _____

Physical size of load _____

List of Buildings that shall be either partially or entirely unoccupied by persons:

Building Description/Address	Owners	Telephone number
------------------------------	--------	------------------

Load Penetration (for occupied buildings): How many floors could be penetrated by the load if dropped from the highest point it will be lifted above the building? _____ floors. What is maximum height the load will be lifted above building? _____ ft.

Are charts, maps, and/or diagrams attached?

Narrative description of pickup site, route, delivery site, and plan for ceasing operation if unauthorized persons enter operational area.

(Use additional sheets as necessary.)

[*company official's signature*]

[*title*]

[*date*]

**FIGURE 98-1—Continued
SAMPLE RLCFM**

SAMPLE DIAGRAM OF CONGESTED AREA

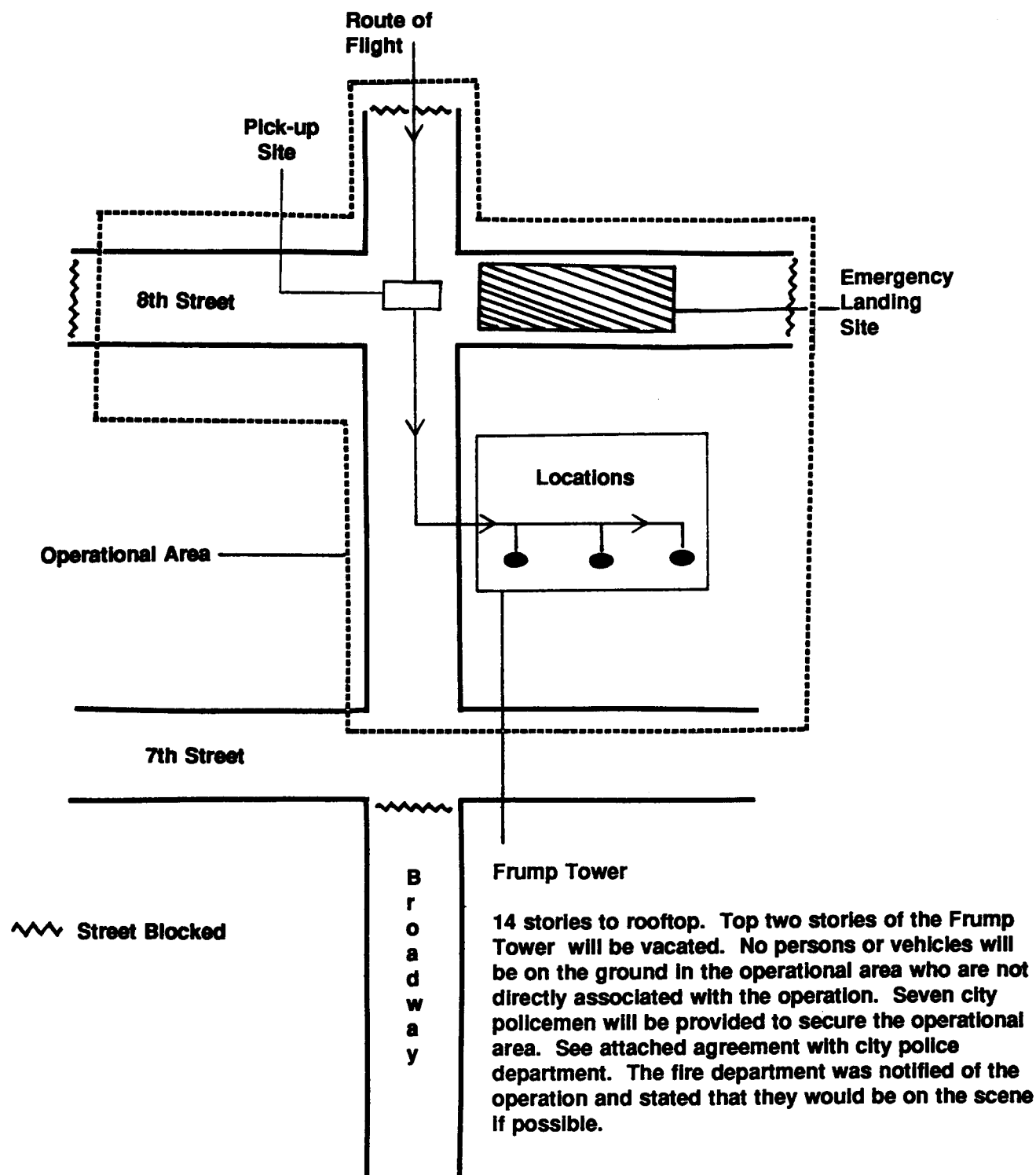


Figure 98-1 —Continued
SAMPLE RLCFM

LETTER OF AGREEMENT FOR CONGESTED AREA

Personnel of the [*name of the political subdivision*] agree to exclude all unauthorized persons from the operational area described on the attached Congested Area Plan, which was prepared for rotorcraft external-load operations. I understand that the operations will be conducted on [*dates*] and remove the operator's responsibility to exclude all unauthorized persons from the operational area.

[*name of official*]

[*title of official*]

[*date*]

**FIGURE 98-1—Continued
SAMPLE RLCFM**

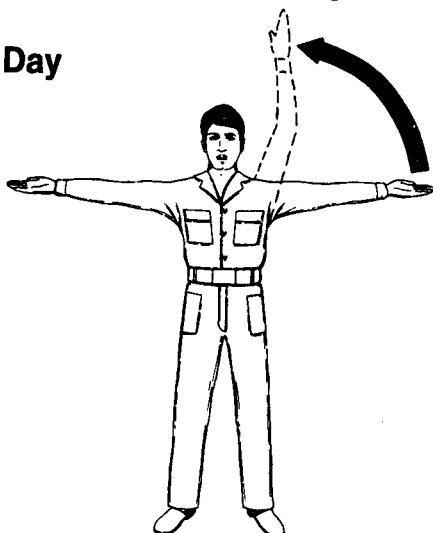
**Appendix 2
Commonly Used Hand Signals**

(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

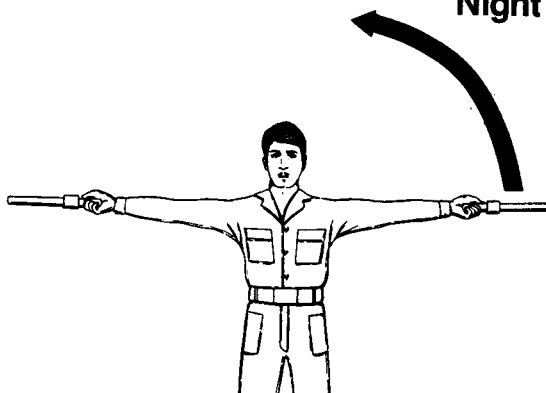
**Move to
Left:**

Right arm extended horizontally sideways in direction of movement and other arm swung in front of body in same direction, in a repeating movement.

Day



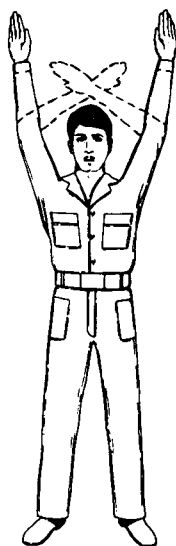
Night



Stop:

Arms held crossed overhead.

Day



Night



**FIGURE 98-1—Continued
SAMPLE RLCFM**

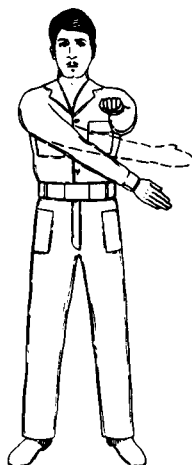
**Appendix 2—Continued
Commonly Used Hand Signals**

(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

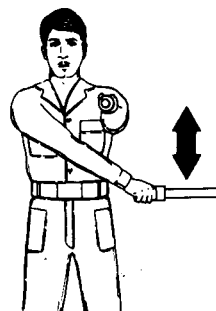
**Release
Sling Load:**

Left arm extended forward horizontally, fist clenched, right hand making horizontal slicing movement below the left fist, palm downward.

Day



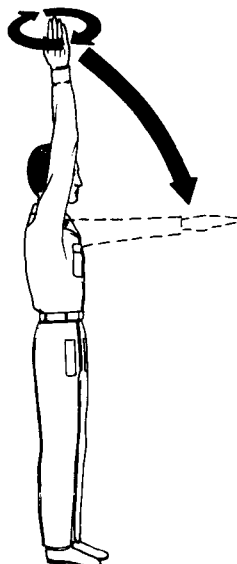
Night



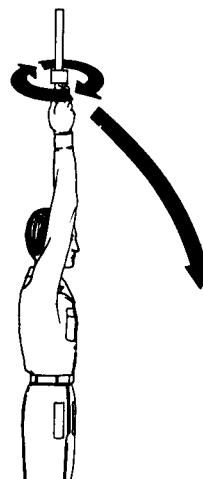
Takeoff:

The right hand is moved in a circular motion overhead, ending in a throwing motion in the direction of takeoff. Also means load clear, hookup good.

Day



Night



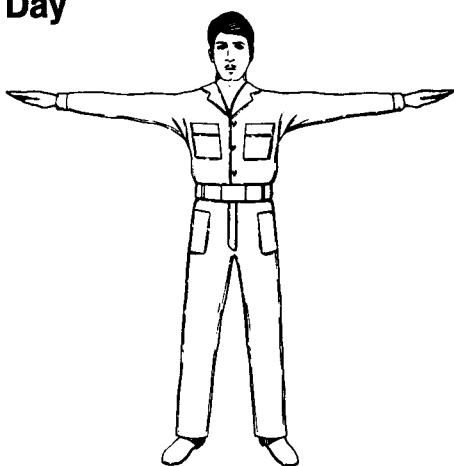
**FIGURE 98-1—Continued
SAMPLE RLCFM**

**Appendix 2—Continued
Commonly Used Hand Signals**

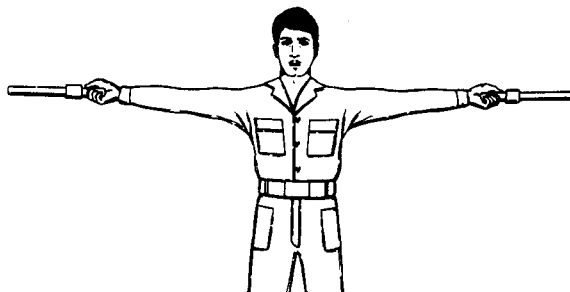
(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

Hover: *Arms extended horizontally sideways, palms downward.*

Day

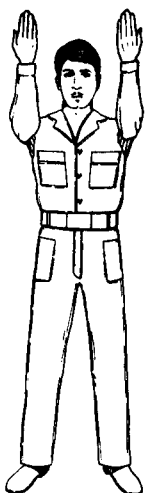


Night



Move Forward: *Arms a little aside, palms facing backward and repeatedly moved upward-backward from shoulder height.*

Day



Night



**FIGURE 98-1—Continued
SAMPLE RLCFM**

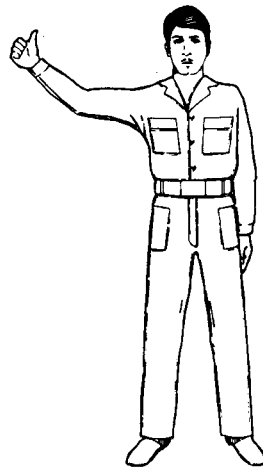
**Appendix 2—Continued
Commonly Used Hand Signals**

(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

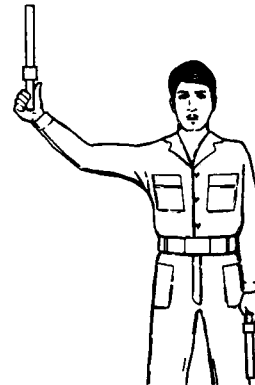
**Affirmative
Signal:**

Hand raised, thumb up.

Day



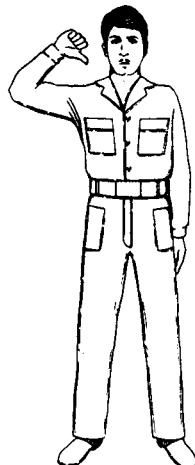
Night



**Negative
Signal:**

Hand raised, thumb down.

Day



Night



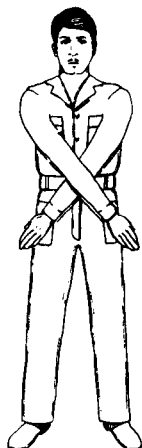
**FIGURE 98-1—Continued
SAMPLE RLCFM**

**Appendix 2—Continued
Commonly Used Hand Signals**

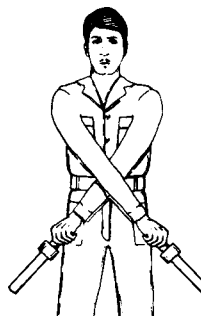
(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

Land: *Arms crossed and extended downward in front of the body.*

Day



Night

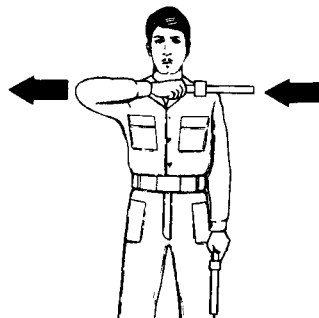


**Cut
Engine(s):** *Either arm and hand level with shoulder, hand moving across throat.*

Day



Night



**FIGURE 98-1—Continued
SAMPLE RLCFM**

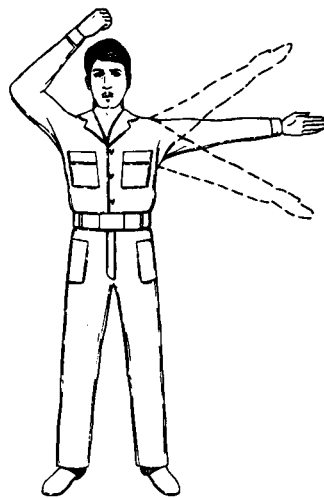
**Appendix 2—Continued
Commonly Used Hand Signals**

(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

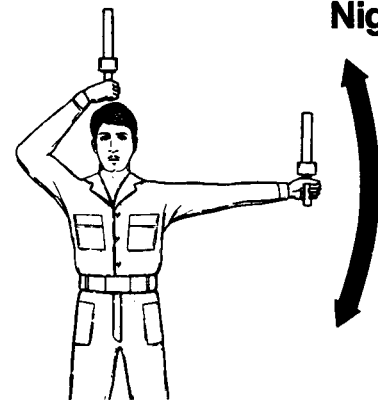
**Move Hook
Down or Up:**

Right fist held above head: left arm extended horizontally, palm faced outward, then swept down or up to indicate direction of hook movement.

Day



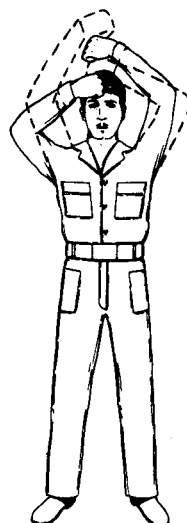
Night



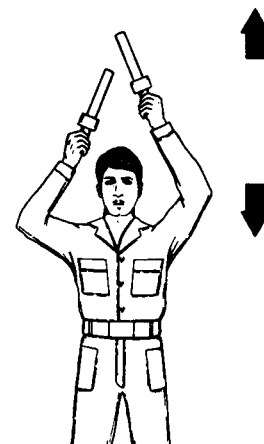
Hookup:

Hands raised alternately above the head in a "rope climbing" motion to take up slack.

Day



Night



**FIGURE 98-1—Continued
SAMPLE RLCFM**

**Appendix 2—Continued
Commonly Used Hand Signals**

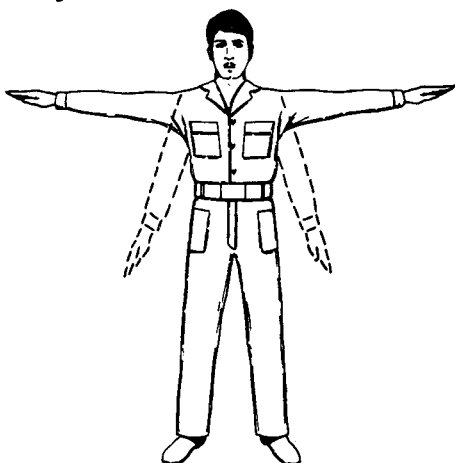
(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

Move

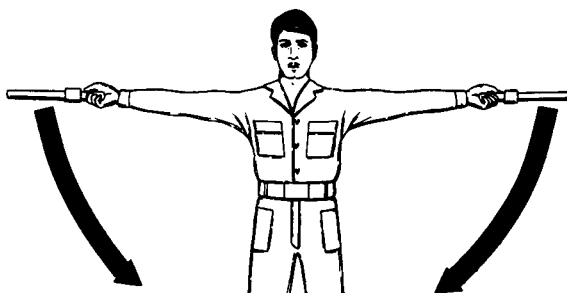
Downward:

Arms extended horizontally sideways, beckoning downward, with palms turned down.

Day



Night

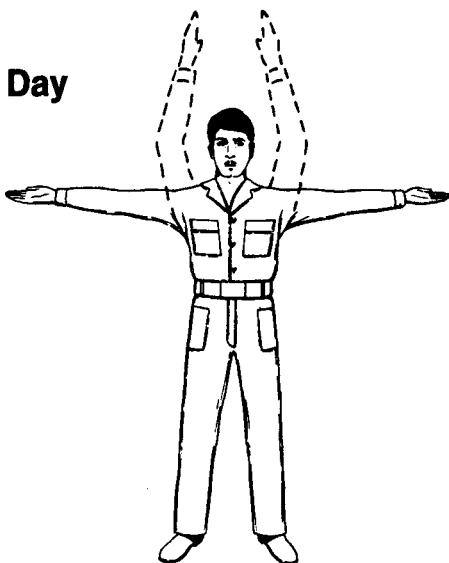


Move

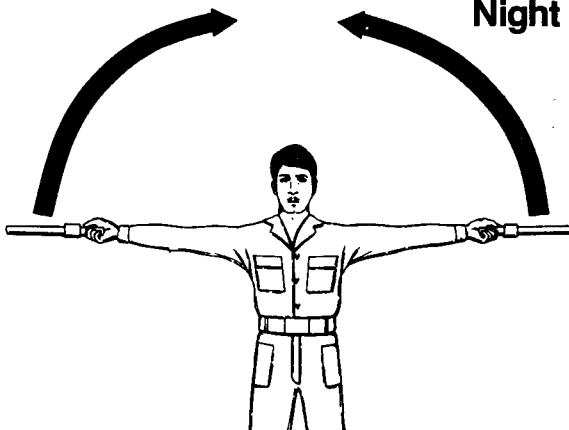
Upward:

Arms extended horizontally sideways, beckoning upward, with palms up.

Day



Night



**FIGURE 98-1—Continued
SAMPLE RLCFM**

**Appendix 2—Continued
Commonly Used Hand Signals**

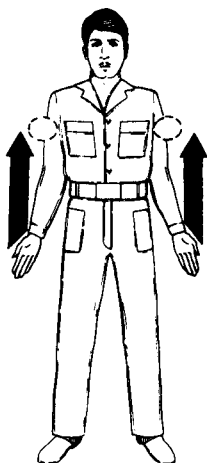
(ALTHOUGH NOT DEPICTED, ALL GROUND PERSONNEL SHOULD WEAR SAFETY GLASSES, HARD HATS, AND HEARING PROTECTION)

Move

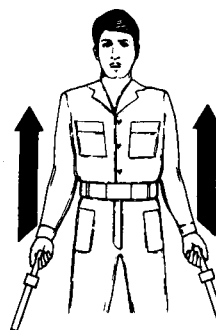
Rearward:

Arms by sides, palms facing forward, arms swept forward and upward repeatedly to shoulder height.

Day



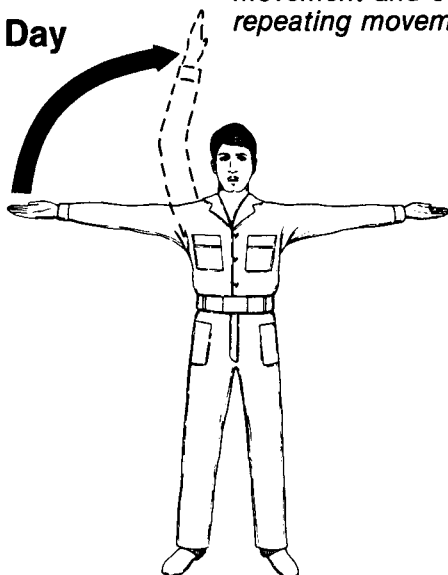
Night



**Move to
Right:**

Left arm extended horizontally sideways in direction of movement and other arm swung overhead in same direction, in a repeating movement.

Day



Night

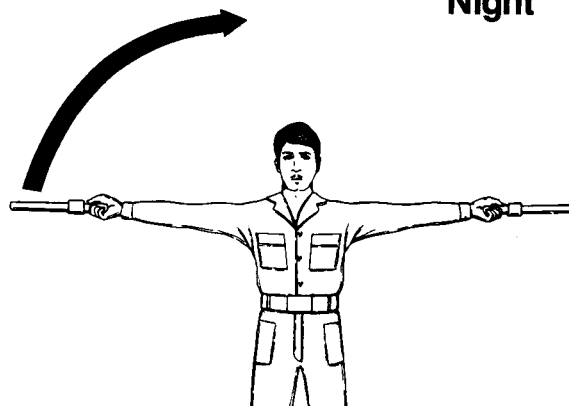


FIGURE 98-2
LETTER REJECTING RLCFM OR PROPOSED REVISION

FAA Letterhead

[*date*]

[*name and address of operator*]

Dear [*name of operator*],

The revisions submitted for your Rotorcraft-Load Combination Flight Manual (RLCFM) are being returned for the following reasons:

- *List the appropriate area that does not conform to the associated FAR or is in contradiction with the operations specifications.*

Sincerely,

[*POI's signature*]